How Much Calcium is in Our Bones?

Objectives:

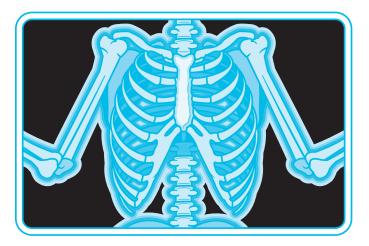
- Students will be able to understand the amount of calcium in bones by making visual representations.
- Students will explore the increase in calcium in the bones during their teen years and understand the importance of getting a calcium-rich diet.

Materials Needed:

- 10 pounds of white flour
- 5 sets of measuring cups
- Clear plastic resealable gallon size bags (at least 10)
- Instructions 5 assignments (provide one per group)
- Permanent markers for writing on bags

Lesson Introduction:

- Start the lesson discussing why students think
 it is important to have a calcium-rich diet. Explain
 how getting enough calcium is important as we
 grow into our teen years. This is when our
 bones develop to be their strongest.
- 2. Tell students they are about to see how important calcium is to their bones at each stage of their lives.



Activity:

- 1. Divide students into groups of five.
- 2. Distribute the five life stages, one per group.
- Explain to students why they will be using flour. The flour is used in this activity to represent the amount of calcium in bones, by weight, in the human body at different life stages.

5 Life Stages:

- a. ¼ cup flour = average amount of calcium in a newborn's skeleton
- b. 3½ cups flour = average amount of calcium in a ten year old kid's skeleton
- c. 7 cups flour = average amount of calcium in a fifteen year old teenager's skeleton
- d. 11 cups flour = average amount of calcium in an adult's skeleton
- e. 6½ cups flour = average amount of calcium in an adult's skeleton with osteoporosis (30-40% bone loss)
- 4. Each group will measure the flour and place it in the resealable bag. Each group will then need to label their bag with life stages information provided. Along with the life stages information, students can write how the age group in their life stage can get the calcium needed daily to maintain this calcium-rich bone structure, or how they can help improve bone density by increasing calcium intake.
- 5. Have each group share their information.
- 6. After the information is shared, put the bags sideby-side for students to compare. Discuss the comparisons:
 - a. Depending on the diet, the amount of calcium in our bones increases and should double from 10 to 15 years of age. Our height does not double during this time. Our bones become more dense, filling in and becoming thicker.

Continued on back

- b. Osteoporosis is a disease where the bones lose calcium and become weak causing bones to break more easily.
- c. Consuming plenty of calcium-rich foods and beverages, as well as being physically active for your whole life, helps prevent osteoporosis.
- d. Some of the best dietary sources for calcium are low-fat dairy products like milk, yogurt and cheese.

Apply:

Have students share what they learned from the activity. Reinforce the importance of three cup equivalents per day of fat-free or low-fat milk or dairy products. Encourage students to take this information home and share it with their families. Ask them to discuss with their families different ways they can increase the amount of calcium-rich foods at home.

Extend the Activity:

Language Arts: Have students journal about what they learned from this experiment.

Science: Before the lesson, have students make a prediction about how much calcium they think is in our bones at each stage of life. Share predictions with the group.